July 6, 1988

MEMORANDUM

SUBJECT Trip Report and Data Summary for Response to Barnes Residence (a k a , Town and Country Market), 6925 Laurel, Raytown, Missouri

FROM Jeffrey G Weatherford
SINV/EP&R/ENSV

TO Paul E Doherty
Chief, SINV/EP&R/ENSV

INTRODUCTION

EP&R involvement with this site began in 1983 when Mrs Murle C Barnes complained of foul odors in the basement of her residence at 6925 Laurel, Raytown, Missouri Several responses and investigations have taken place since this initial response on May 13, 1983 The purpose of this memorandum is to provide an update on the history of this site and details of this latest response

PREVIOUS INVESTIGATIONS

May 1983--EP&R and TAT/VII responded to Mrs Barnes residence and noticed a peculiar odor in the basement HNu readings around the sump in the basement were as high as 20-30 parts per million (ppm) Several holes were dug around the Barnes residence and around stained areas at the nearby Town & Country Market (T&C) to a depth of approximately three feet HNu readings in these holes were negative A water sample was collected from water in the sump and a soil sample was collected from the outside sump discharge where the grass and soil had turned a copper-brown color Organic compounds associated with hydrocarbons were detected in the soil and water samples in trace concentrations T&C had the pressure of their gasoline tanks tested with no observed loss in pressure Mr Rick Kraeffels of T&C reported an average unaccounted for loss of 100-125 gallons of product after reviewing store records

JW PK 07 06 88

SINV JGW 7/6/88

SINV PKD 7/6/88

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 7
25 FUNSTON ROAD
KANSAS CITY KANSAS 66115

July 6, 1988

MEMORANDUM

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November 1984 thru July 1985--A preliminary assessment and site investigation (PA/SI) were conducted by the Missouri Department of Natural Resources (MDNR) Samples were collected by MDNR which also showed trace amounts of chemicals associated with hydrocarbons MDNR reported that a Petro-Tite tank test had been performed on the T&C tanks on April 25, 1984, with no significant leakage detected Through interviews with locals, MDNR reported that a gas station and residence were once located at the T&C site However, reports from the Raytown building inspector and a local resident indicated that all tanks associated with the former gas station had been removed It was also reported that an airport was located to the south of the Barnes residence This airport, Richards Flying Field (later renamed Ong Field), operated from the 1920s to shortly after World War II

August 1986--The Ecology & Environment Field Investigation Team (E&E/FIT) conducted a soil gas survey at the Barnes residence site with the use of a portable GC with a flame-ionization detector The standard used for the GC was gasoline collected from the T&C pump Results of this survey showed a definite plume of hydrocarbon contamination surrounding T&C with concentrations decreasing with distance from the market

September 1986--EPA responded to the Barnes residence after complaints of foul odors in the basement following a heavy rain Samples of water and air were collected with the use of tenax tubes Holding times were exceeded on the air samples while in the laboratory and those samples were not analyzed The water samples again showed trace hydrocarbon constituents

November 1986--EPA and TAT/VII responded to the Barnes residence after Mrs Barnes notified EPA of returning odors in her basement following a heavy rain The team noticed a definite odor in the basement, but could not distinguish it as hydrocarbons The sump contained a reddish-orange scum on top of the water as was also noticed at the sump discharge pipe No readings were detected on the explosimeter The team theorized that the odor may have been that of decaying iron bacteria, collected samples, and had them analyzed for heavy metals The samples showed high iron content, but were not exceedingly high

January 1987--A letter was sent to Mr Kraeffels, T&C, requesting daily gasoline inventory records Monthly inventory records were received and losses from leakage could not be ascertained from these records

July 1987--It was learned that T&C had ceased conducting business at this location EPA then contacted Chief Ray Daniels of the Raytown Fire Department to determine if any local ordinances

governed the removal of abandoned underground storage tanks Chief Daniels stated that underground storage tanks were required to be removed within 90 days of abandonment Chief Daniels then ordered T&C to remove their tanks

September 1987--T&C contracted with Double-Check, Inc , for the removal of the tanks EPA was on site during this removal to monitor for possible leakage of the tanks All gasoline was emptied from the two tanks and approximately 500 gallons of water remained in each tank A Double-Check employee commented that the water could be the result of leakage in the tanks, lines, or from water entering the fill pipe if left open at any time Once the tanks were removed, no odors were noticed from the water remaining in the excavation The fill around the tanks was sand Explosimeter and HNu readings were negative Mrs Barnes was notified of the tank removal and told to contact EPA if odor problems persisted

RESPONSE

Mr Jeff Weatherford and Mr Mark Roberts, EPA/EP&R, responded to the Barnes residence on April 4, 1988, after a complaint from Mrs Barnes of foul odors in her basement following a heavy rain Upon entry into the basement, the team noticed a definite heavy oil smell Samples were collected from the sump water and soil from the discharge pipe A team returned the following day to collect air samples with the use of tenax tubes The timer on the pump was set to collect an 8-hour sample The pump was checked at 5-1/2 hours and was still running The pump was not checked again until 9 hours from the start, and it was not running The tenax tubes were removed from the pumps and placed in glass culture tubes Samples were taken to the sampler's home and kept refrigerated The following morning (April 5, 1988), the samples were delivered to the Regional Laboratory for analysis The samples were placed in the refrigerator on the back dock at the Laboratory

Due to inexperience in this type of sampling, the following potential errors were introduced

1 Sample time The sample was not collected until after 9 hours from the start of run time The timer was set for 8-hour collection, but the fault timer was not checked before turning the switch to the off position Since the batteries were fully charged prior to sampling, an 8-hour sampling episode will be assumed

2 Packaging The samples should have been placed in a paint can with a thimble of activated carbon to determine if volatile organics were migrating into the containers from the atmosphere, or vice-versa

3 Sample holding The samples were pulled from the back dock refrigerator and placed on the laboratory chemist's desk to await analysis The samples should have remained refrigerated to avoid the release of organics from the sample to the atmosphere

DATA SUMMARY

Two air samples (PK824004 and 005) were collected side-by-side with the use of a manifold system connected to a single pump A field blank (PK824003F) was left at the site near the pump The samples were analyzed for volatile organics and were found to contain light hydrocarbons, more specifically, benzene, toluene, and total xylenes Benzene, toluene, and total xylenes were detected in all samples, including the field blank An approximate concentration is reported in the attached data in nanograms Table I lists concentrations per cubic meter of air, based on an 8-hour sampling episode for the calibrated flow rates

Analysis of the water sample from the sump (PK824001) detected trace amounts of unknown hydrocarbons (<1 ppm) along with vinyl chloride Analysis of a sediment sample (PK824002) collected at the sump discharge detected bromoform, bromodichloromethane, dibromochloromethane, and bis(2-ethylhexyl)phthalate Chloroform and trichlorosthene were also detected at qualitatively estimated values Table II lists concentrations of chemicals detected in the water and sediment samples

SUMMARY/CONCLUSION

EP&R has responded to various complaints of foul odors in the basement of the Mrs Murle C Barnes residence, 6925 Laurel in Raytown, Missouri The odor appears to be coming from a sump located in the northeast corner of the basement Trace concentrations of chemicals associated with hydrocarbons have been detected in samples of the sump water and in the air A potentially responsible party is not readily identifiable due to the large number of former gas stations which operated in the area and the lack of information on fuel storage

T&C, a self-service gas station and convenience store was located adjacent to, and south of, the Barnes property Due to the location of this facility in respect to the Barnes residence, it was considered as a primary potential source for the hydrocarbons A soil gas survey at this site was conducted, and a potential hydrocarbon plume was delineated T&C ceased conducting business at this location and subsequently removed their buried storage tanks Although no visual gasoline was noticed in the excavation by the on-scene coordinator monitoring this activity, it was noted that the bottom of the excavation was

filled with sand and that the tanks each contained approximately 500 gallons of water It was also reported by MDNR that the tanks and the lines had been tested for leaks using the Petro-Tite system In conversations with Mr Kraeffels or Mr Rick Barth of T&C, there was no mention of a Petro-Tite test being performed at this site

On June 3, 1988, Mr Bruce Morrison and Mr Roberts, EP&R, responded to a complaint of foul odors at a residence located at 9301 E 69th Street Air samples were collected at this site which also showed the presence of hydrocarbons (PK832001, 002, 003) Results and concentrations per cubic meter of air, based on an 8-hour sampling episode, are shown in Table III This residence is located slightly north and east of the Barnes residence Sampling methods were similar to those mentioned above, and the field blank was opened and left at the site near the pump The blank should have remained closed

TABLE I

SAMPLE #	EPISODE	LOCATION	CHEMICAL	LAB CONC	AIR CONC (mg/m^3)
PK824003F	Field Blank	Blank	Benzene Toluene Total xylenes	1000 ng 1000 ng 1000 ng	
PK824004	480 min @ 24 4 ml/min	Manifold #18	Benzene Toluene Total xylenes	2000 ng 1000 ng 3000 ng	0 171 0 085 0 256
PK824005	480 min @ 20 2 ml/min	Manifold #7	Benzene Toluene Total xylenes	1000 ng 1000 ng 3000 ng	0 103 0 103 0 309

TABLE II

SAMPLE #	LOCATION	CHEMICAL	CONCEN	GUIDANCE CONCEN
PK824001	Water from Basement Sump	Vinyl Chloride	180 µg/l	1 µg/l MCL
		Unknown Aromatic Hydrocarbons	130 µg/l	N/A
PK824002	Sediment from Outside Sump Discharge	Bromodichloro-methane	250 µg/kg	
		Dibromochloro-methane	260 µg/kg	
		Bromoform	310 µg/kg	
		Chloroform	200 µg/kg *	
		Trichloroethene	150 µg/kg *	
		Chlorobenzene	220 µg/kg *	
		Bis(2-ethylhexyl) phthalate	3500 mg/kg	

* = Estimated Value, Qualitatively Identified but Below Quantitation Limits

TABLE III

SAMPLE #	EPISODE	LOCATION	CHEMICAL	LAB CONC	AIR CONC (mg/m³)
PK832001	480 min @ 29 2 ml/min	Front Rm Tube 8B	Methylene Chloride	20 0 µg	1 43
			Hexane	5 0 µg	0 36
			Toluene	3 0 µg	0 21
			Phenol	0 3 µg	0 02
			Unknown hydro-Cs	14 0 µg	
			Unknown alkanes	31 0 µg	
			Unknown organics	4 7 µg	
PK832002	490 min @ 51 2 ml/min	Front Rm Tube 8A	Methylene chloride	20 0 µg	0 81
			Hexane	10 0 µg	0 41
			Benzene	6 0 µg	0 24
			Toluene	5 0 µg	0 20
			Dichloro-benzene	2 0 µg	0 08
			Unknown hydro-Cs	61 0 µg	
			Unknown organics	40 0 µg	
PK832003	Blank	Blank	Methylene chloride	20 0 µg	Invali-dated
			Benzene	6 0 µg	
			Toluene	4 0 µg	
			Phenol	2 0 µg	
			Dichloro-benzene	0 3 µg	
			Unknown alkanes	58 0 µg	
			Unknown ketones	40 0 µg	
			Unknown organics	76 0 µg	

RECOMMENDATIONS

Although hydrocarbons have been detected in two residences located near the former T&C market, the concentrations detected in the basement are well below Workplace Exposure Levels After

several visits to the Barnes residence, the odor in her basement has been most noticeable on this last visit T&C appears to be the prime suspect, although there is little direct evidence to prove this conclusively EP&R should continue to monitor the Barnes basement to determine if the odor problem is eliminated with the removal of the T&C tanks In the event that problems persist, it may be advisable to install a monitoring well network around the T&C site

Future odor problems may be mitigated by installing a ventilation system to Mrs Barnes' sump, drawing air from around the sump, venting it to the outside The fan on such a ventilation system could be connected to the sump motor in such a way as to operate only while the sump operates It is evident that the odors are coming from the sump during periods of wet weather

The remedies mentioned above are only options which may be considered if it is determined that a health threat exists at this location EP&R has informed Mrs Barnes to continue to call if the odors persist

Figure 1 Site Location Map
Barnes Residence
Raytown, Missouri

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 7
25 FUNSTON ROAD
KANSAS CITY KANSAS 66115

Date 5/23/88

MEMORANDUM

SUBJECT Data Transmittal for Activity # PK824,
Site Description Barnes Residence

FROM Robert D Kleopfer, Ph D
Chief, Laboratory Branch, ENSV

TO Charles P Hensley
Chief, Emergency Planning and Response Branch, ENSV

ATTN Jeff Weatherford

Attached is the data transmittal for the above referenced site

This should be considered a ___ Partial or X Complete data transmittal

(completes transmittal of _____) If you have any questions

or comments please contact Dee Simmons at 236-3881

Attachments

cc Data File

EPA Region VII

Data Qualification Codes

U - The material was analyzed for but was not detected The associated numerical value is the sample quantitation limit

M - Compound was qualitatively identified however, quantitative value is less than contract required quantitation limits (CLP data) or value is less than limit of quantitation (EPA data) and is, therefore, an estimated value

J - The associated numerical value is an estimated quantity

I - The data are invalid (compound may or may not be present) Resampling and/or reanalysis is necessary for verification

O - Sample lost or not analyzed

L - Value known to be higher than value reported

N - Presumptive evidence of presence of material

NA - Sample was not analyzed for this compound

NJ - Presumptive evidence of the presence of the material at an estimated quantity

UJ - The material was analyzed for, but was not detected The sample quantitation limit is an estimated quantity

Codes for Flash Point Data

L - The sample did not ignite or "flash " This is the highest temperature at which the sample was tested It is possible that the material may be ignitable at higher temperatures

K - The sample did ignite or "flash" at the lowest temperature tested This is usually the ambient temperature at the time of the test It is possible that the material may be ignitable at even lower temperatures

FIELD SHEET
U S ENVIRONMENTAL PROTECTION AGENCY, REGION VII
ENVIRONMENTAL SERVICES DIV 25 FUNSTON RD KANSAS CITY, KS 66115

Site Name BARNES RESIDENCE Site Number
Location 6925 LAUREL ST, RAYTOWN MO Site Code

Collected YR 88 MO 04 Day 04 Time 1450 Leader WEATHERFORD

Sample Number PK824001 SMO # _____

Sample Media (circle one)
SOIL, DUST, RINSATE, SEDIMENT, (WATER), OTHER _____

Sample Split (circle one) YES (NO)

Sample Container	Tag Color	Preservative	Analysis Requested
2-40 ml glass	LIME	Ice @ 4°C	VOLATILE ORGANICS
2-800 ml glass	PURPLE	Ice @ 4°C	SEMI VOLATILE ORGANICS

Depth — Fan # — Aliquots —

Samplers MARK ROBERTS, EPA R
JEFF WEATHERFORD EPA R

COMMENTS OF FIELD PERSONNEL

Site Description WATER FROM INLET PIPE AT SUMP IN NORTHEAST CORNER OF BARNES BASEMENT WATER IS HIGHLY ODIFEROUS - BASICALLY A HEAVY OIL/ ODOR WITH AN UNIDENTIFIED SHARP COMPONENT WATER IS CLEAR WITH SOME RESIDUE - PROBABLY FROM PIPING

IBM-FC

FIELD SHEET
U S ENVIRONMENTAL PROTECTION AGENCY, REGION VII
ENVIRONMENTAL SERVICES DIV 25 FUNSTON RD KANSAS CITY, KS 66115

Site Name BARNES RESIDENCE Site Number
Location 6925 LAUREL ST, RAYTOWN, MO Site Code

Collected YR 88 MO 04 Day 04 Time 1510 Leader WEATHERFORD

Sample Number PK824002 SMO # _____

Sample Media (circle one)
SOIL, DUST, RINSATE, (SEDIMENT), WATER, OTHER _____

Sample Split (circle one) YES (NO)

Sample Container	Tag Color	Preservative	Analysis Requested
2 - 40ml glass	LIME	Ice @ 4°C	VOLATILE ORGANICS
1 - 8 oz glass	PURPLE	Ice @ 4°C	SEMIVOLATILE ORGANICS

Depth 0-1" Pan # — Aliquots 10

Samplers MARK ROBERTS, EP&R
JEFF WEATHERFORD, EP&R

COMMENTS OF FIELD PERSONNEL

Site Description SEDIMENT FROM DRAINAGEWAY LEADING FROM SUMP PUMP DISCHARGE (IN NORTHEAST CORNER OF BARNES' BACKYARD) TO DRAINAGE DITCH ON SOUTH SIDE OF 69th STREET TERRACE. ALIQUOTS COLLECTED AT POINT OF DISCHARGE TO A POINT APPROX 5 FEET NORTH OF DISCHARGE

IBM-PC

FIELD SHEET
U S ENVIRONMENTAL PROTECTION AGENCY, REGION VII
ENVIRONMENTAL SERVICES DIV 25 FUNSTON RD KANSAS CITY, KS 66115

Site Name Barnes Residence — Site Number
Location Raytown, MO — Site Code

Collected YR 88 MO 04 Day 05 Time ____ Leader

Sample Number PK824003 F SMO # _____

Sample Media (circle one)
SOIL, DUST, RINSATE, SEDIMENT, WATER, (OTHER) Air

Sample Split (circle one) YES (NO)

Sample Container	Tag Color	Preservative	Analysis Requested
Glass Vial (Tenex)	Blue		Volatiles

Depth _____ Fan # _____ Aliquots _____

Samplers Weatherford
Sandifer

COMMENTS OF FIELD PERSONNEL

Site Description Field Blank

IBM-PC

FIELD SHEET
U S ENVIRONMENTAL PROTECTION AGENCY, REGION VII
ENVIRONMENTAL SERVICES DIV 25 FUNSTON RD KANSAS CITY, KS 66115

Site Name Barnes Residence — Site Number
Location Raytown, MO — Site Code

Collected YR 88 MO 04 Day 05 Time ____ Leader Weatherford

Sample Number PKBZ4004 SMO # ____

Sample Media (circle one)
SOIL, DUST, RINSATE, SEDIMENT, WATER, (OTHER) Air

Sample Split (circle one) YES (NO)

Sample Container	Tag Color	Preservative	Analysis Requested
Glass Vial (Tenex)	Blue		Volatiles (Hydro C's)

Depth ____ Fan # ____ Aliquots ____

Samplers Weatherford
Sandifer

COMMENTS OF FIELD PERSONNEL

Site Description Flow rate 24 36 Ml/min
manifold # 18

Start 0950

Stop 1900

Temp 20°C

mm Hg 724

IBM-PC

FIELD SHEET
U S ENVIRONMENTAL PROTECTION AGENCY, REGION VII
ENVIRONMENTAL SERVICES DIV 25 FUNSTON RD KANSAS CITY, KS 66115

Site Name Barnes Residence — Site Number
Location Raytown, MO — Site Code

Collected YR 88 MO 04 Day 05 Time ____ Leader WeatherFord

Sample Number PK824[redacted]005 SMO # _____

Sample Media (circle one)
SOIL, DUST, RINSATE, SEDIMENT, WATER, (OTHER) Air

Sample Split (circle one) YES (NO)

Sample Container	Tag Color	Preservative	Analysis Requested
Glass Vial (Tenex)	Blue		Volatiles

Depth _____ Pan # _____ Aliquots _____

Samplers WeatherFord
Sand Fer

COMMENTS OF FIELD PERSONNEL

Site Description Flow Rate 202 ml/min
Manifold #7
Start 0950
Stop 1900
Temp 20°C
mmHg 724

IBM-PC

ICF TECHNOLOGY INCORPORATED
NORTHROP SERVICES INCORPORATED

Gateway Center II, Suite 311
Fourth & State Avenue
Kansas City, KS 66101
(913) 281-0307

TO Robert D Kleopfer, Ph D RDK
Deputy Project Officer for Region VII ESAT, EPA

FROM Barry G Miller, ESAT Chemist, NSI-ES
Region VII ESAT, NSI-ES

THRU Tenkasi S Viswanathan, Ph D TSV
Region VII ESAT Team Leader, NSI-ES

DATE May 9, 1988

SUBJECT TID Report - Tenax Air Samples from Barnes Residence

TID# 07-8804-067
ICF Acct # 302-26-067-01 Assignment #1
NSI Sales Order# 4631-0671
EPA Activity # PK824
ESAT Document Control # ESAT-VII-067-050988

Samples PD824003F, PK824004 and PK824005 (Tenax air samples) were desorbed on the Tekmar 5010 and analyzed by GC/MS scan The samples and the field blank contained large amounts of light hydrocarbons in addition to benzene, toluene and xylenes resembling a petroleum product such as gasoline Hydrocarbon levels in the samples were approximately three times higher than those in the field blank Quantitation was not possible for the hydrocarbons due to the nature of the chromatogram The "hump" shaped chromatograms for the two samples contained a larger number of hydrocarbons than the chromatogram for the field blank

The Tenax tubes had been taken to the field in culture tubes and after sampling were placed in these tubes and left on my desk for analysis The preferred technique is to pack the sample cartridges initially in the culture tubes and pack these culture tubes in a paint can with a thimble of activated carbon and to refrigerate them until analysis

This assignment is now complete Data sheets for the samples are attached Please let me know if you have any questions

ANALYTICAL DATA REPORT

Tentatively Identified Compounds from GC/MS Scan

Fraction Volatiles
Sample Number PK824003F
Matrix Air/Tenax

Method No Thermal Desorb
Date/Analyst 4-27-88/BGM
Units ~~NG~~ NG

Scan Number	Compound Name	Estimated Value*
836	Benzene	1000
1159	Toluene	1000
1490,1517,1606	Total Xylenes	1000

*This is a crude estimation based on response relative to an internal standard An authentic standard has not been run

ANALYTICAL DATA REPORT

Tentatively Identified Compounds from GC/MS Scan

Fraction Volatiles
Sample Number PK824004
Matrix Air/Tenax

Method No Thermal Desorb
Date/Analyst 4-27-88/BGM
Units ~~NG~~ µG

Scan Number	Compound Name	Estimated Value*
836	Benzene	2000
1159	Toluene	1000
1490,1517,1606	Total Xylenes	3000

*This is a crude estimation based on response relative to an internal standard An authentic standard has not been run

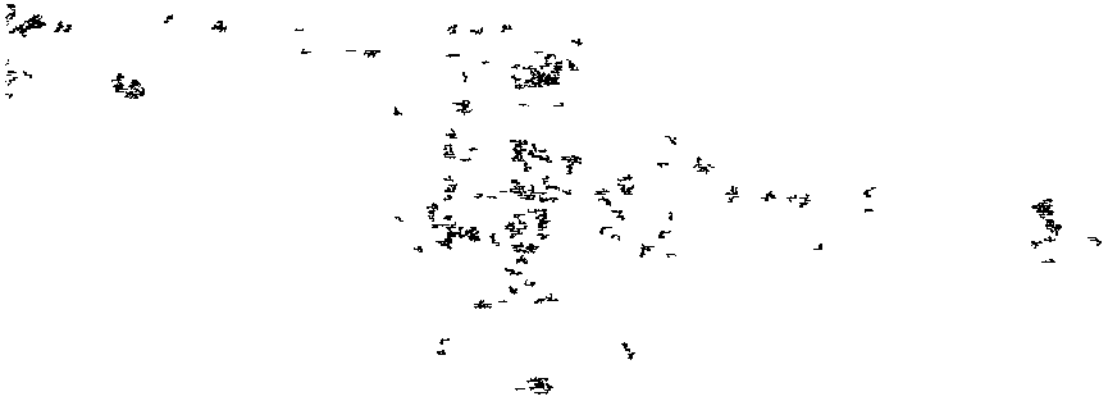
ANALYTICAL DATA REPORT

Tentatively Identified Compounds from GC/MS Scan

Fraction Volatiles
Sample Number PK824005
Matrix Air/Tenax

Method No Thermal Desorb
Date/Analyst 4-27-88/BGM
Units ~~NG~~ µG

Scan Number	Compound Name	Estimated Value*
836	Benzene	1000
1159	Toluene	1000
1490, 1517, 1606	Total Xylenes	3000



*This is a crude estimation based on response relative to an internal standard An authentic standard has not been run

ANALYSIS TYPE VOLATILES

TITLE' BARNES RESIDENCE
LAB EPA REGION VII
SAMPLE PREP VJS___ ANALYST/ENTRY VJS

MATRIX WATER
METHOD 6241W00
REVIEWER ____RB__
DATA FILF VJS

UNITS UG/L
CASE.
DATE 05/19/88

	PK824001	PK824002
CHLOROMETHANE	60 U	600 U
BROMOMETHANE	110 U	1100.U
VINYL CHLORIDE	180	700 U
CHLOROETHANE	70 U	700 U
METHYLENE CHLORIDE	50 U	500 U
ACETONE	50 U	500 U
CARBON DISULFIDE	25 U	250 U
1,1-DICHLOROETHENE	25 U	250 U
1,1-DICHLOROETHANE	25 U	250 U
1,2-DICHLOROETHENE	25.U	250 U
CHLOROFORM	25 U	200 M
1,2-DICHLOROETHANE	25 U	250 U
2-BUTANONE	50 U	500 U
1,1,1-TRICHLOROETHANE	25.U	250 U
CARBON TETRACHLORIDE	25.U	250 U
VINYL ACETATE	50.U	500 U
BROMODICHLOROMETHANE	25 U	250
1,2-DICHLOROPROPANE	25.U	250 U
CIS-1,3-DICHLOROPROPENE	25.U	250 U
TRICHLOROETHENE	25.U	150 M
BENZENE	25.U	250 U
DIBROMOCHLOROMETHANE	25 U	260
1,1,2-TRICHLOROETHANE	25 U	250 U
TRANS-1,3-DICHLOROPROPENE	25.U	250.U
BROMOFORM	25 U	310
4-METHYL-2-PENTANONE	50.U	500.U
2-HEXANONE	50.U	500 U
1,1,2,2-TETRACHLOROETHANE	25.U	250.U
TETRACHLOROETHENE	25 U	250 U
TOLUENE	25 U	250 U
CHLOROBENZENE	25.U	220.M
ETHYL BENZENE	25 U	250 U
STYRENE	25 U	250 U
TOTAL XYLENES	25 U	250 U

** NOTE N/A MEANS NOT ANALYZED **
*** I MEANS ANALYZED BUT INVALID DATA ***

ANALYSIS TYPE SEMIVOLATILES-PAGE 1

TITLE' BARNES RESIDENCE | MATRIX WATER | UNITS UG/L
LAB EPA REGION VII | METHOD 6251W00 | CASE
SAMPLE PREP'_____ | ANALYST/ENTRY' BHJ | REVIEWER _____ | DATE 04/25/88
DATA FILE' BHJ

PK824001

PHENOL	10 U
BIS(2-CHLOROETHYL) ETHER	10 U
2-CHLOROPHENOL	10 U
1,3 DICHLOROBENZENE	10 U
1,4 DICHLOROBENZENE	10 U
BENZYL ALCOHOL	10 U
1,2 DICHLOROBENZENE	10 U
2-METHYLPHENOL	10.U
BIS(2-CHLOROISOPROPYL)ETHER	10 U
4-METHYLPHENOL	10.U
N-NITROSO-DIPROPYLAMINE	10 U
HEXACHLOROETHANE	10 U
NITROBENZENE	10 U
ISOPHORONE	10 U
2-NITROPHENOL	10 U
2,4-DIMETHYLPHENOL	10 U
BENZOIC ACID	50 U
BIS(2-CHLOROETHOXY) METHANE	10 U
2,4 DICHLOROPHENOL	10 U
1,2,4-TRICHLOROBENZENE	10 U
NAPHTHALENE	10 U
4-CHLOROANILINE	10 U
HEXACHLOROBUTADIENE	10 U
4-CHLORO-3-METHYLPHENOL	10 U
2-METHYLNAPHTHALENE	10 U
HEXACHLOROCYCLOPENTADIENE	10.U
2,4,6-TRICHLOROPHENOL	10.U
2,4,5-TRICHLOROPHENOL	50 U
2-CHLORONAPHTHALENE	10 U
2-NITROANILINE	50 U
DIMETHYLPHTHALATE	10 U
ACENAPHTHYLENE	10 U
3-NITROANILINE	50 U
ACENAPHTHENE	10 U
2,4-DINITROPHENOL	10 U
4-NITROPHENOL	50 U
DIBENZOFURAN	10 U
2,4-DINITROTOULENE	10 U

** NOTE N/A MEANS NOT ANALYZED **
*** I MEANS ANALYZED BUT INVALID DATA ***

ANALYSIS TYPE SEMIVOLATILES-PAGE 2

TITLE BARNES RESIDENCE
LAB EPA REGION VII
SAMPLE PREP*_____ ANALYST/ENTRY BHJ

MATRIX WATER
METHOD 6251W00
REVIEWER _____
DATA FILE BHJ

UNITS UG/L
CASE
DATE 04/25/88

PK824001

2,6-DINITROTOLUENE	10 U
DIETHYLPHTHALATE	10 U
4-CHLOROPHENYL PHENYL ETHER	10 U
FLUORENE	10 U
4-NITROANILINE	50.U
4,6-DINITRO-2-METHYLPHENOL	50 U
N-NITROSODIPHENYLAMINE	10 U
4-BROMOPHENYL PHENYL ETHER	10 U
HEXACHLOROBENZENE	10 U
PENTACHLOROPHENOL	50.U
PHENANTHRENE	10 U
ANTHRACENE	10.U
DI-N-BUTYLPHTHALATE	10 U
FLUORANTHENE	10 U
PYRENE	10 U
BUTYL BENZYL PHTHALATE	10 U
3,3' DICHLOROBENZIDINE	20.U
BENZO(A)ANTHRACENE	10 U
BIS(2-ETHYLHEXYL)PHTHALATE	10.U
CHRYSENE	10 U
DI-N-OCTYL PHTHALATE	10.U
BENZO(B)FLUORANTHENE	10 U
BENZO(K)FLUORANTHENE	10 U
BENZO(A)PYRENE	10 U
INDENO(1,2,3-CD)PYRENE	10 U
DIBENZO(A,H)ANTHRACENE	10 U
BENZO(G,H,I)PERYLENE	10.U

** NOTE N/A MEANS NOT ANALYZED **
*** I MEANS ANALYZED BUT INVALID DATA ***

ANALYSIS TYPE SEMIVOLATILES-PAGE 1

TITLE BARNES RESIDENCE
LAB EPA REGION VII
SAMPLE PREF ____ ANALYST/ENTRY BHJ

MATRIX SEDIMENT
METHOD 7221S00
REVIEWER _____
DATA FILE BHJ

UNITS UG/KG
CASE
DATE 04/20/88

PB824002

PHENOL	330 U
BIS(2-CHLOROETHYL) ETHER	330 U
2-CHLOROPHENOL	330 U
1,3 DICHLOROBENZENE	330 U
1,4 DICHLOROBENZENE	330 U
BENZYL ALCOHOL	330 U
1,2 DICHLOROBENZENE	330 U
2-METHYLPHENOL	330 U
BIS(2-CHLOROISOPROPYL)ETHER	330 U
4-METHYLPHENOL	330 U
N-NITROSO-DIPROPYLAMINE	330 U
HEXACHLOROETHANE	330 U
NITROBENZENE	330 U
ISOPHORONE	330 U
2-NITROPHENOL	330 U
2,4-DIMETHYLPHENOL	330 U
BENZOIC ACID	1600 U
BIS(2-CHLOROETHOXY) METHANE	330 U
2,4 DICHLOROPHENOL	330 U
1,2,4-TRICHLOROBENZENE	330 U
NAPHTHALENE	330 U
4-CHLOROANILINE	330 U
HEXACHLOROBUTADIENE	330 U
4-CHLORO-3-METHYLPHENOL	330 U
2-METHYLNAPHTHALENE	330 U
HEXACHLOROCYCLOPENTADIENE	330 U
2,4,6-TRICHLOROPHENOL	330 U
2,4,5-TRICHLOROPHENOL	1600 U
2-CHLORONAPHTHALENE	330 U
2-NITROANILINE	1600 U
DIMETHYLPHTHALATE	330 U
ACENAPHTHYLENE	330 U
3-NITROANILINE	1600 U
ACENAPHTHENE	330 U
2,4-DINITROPHENOL	330 U
4-NITROPHENOL	1600 U
DIBENZOFURAN	330 U
2,4-DINITROTOLUENE	330 U

** NOTE N/A MEANS NOT ANALYZED **
* I MEANS ANALYZED BUT INVALID DATA ***

ANALYSIS TYPE SEMIVOLATILES-PAGE 2

TITLE BARNES RESIDENCE
LAB EPA REGION VII
SAMPLE PREP ____ ANALYST/ENTRY BHJ

MATRIX SEDIMENT
METHOD 7221500
REVIEWER _____
DATA FILE BHJ

UNITS UG/KG
CASE
DATE 04/20/88

PA824002

2,6-DINITROTOLUENE	330	U
DIETHYLPHTHALATE	330	U
4-CHLOROPHENYL PHENYL ETHER	330	U
FLUORENE	330	U
4-NITROANILINE	1600	U
4,6-DINITRO-2-METHYLPHENOL	1600	U
N-NITROSODIPHENYLAMINE	330	U
4-BROMOPHENYL PHENYL ETHER	330	U
HEXACHLOROBENZENE	330	U
PENTACHLOROPHENOL	1600	U
PHENANTHRENE	330	U
ANTHRACENE	330	U
DI-N-BUTYLPHTHALATE	330	U
FLUORANTHENE	330	U
PYRENE	330	U
BUTYL BENZYL PHTHALATE	330	U
3,3 DICHLOROBENZIDINE	660	U
BENZO(A)ANTHRACENE	330	U
BIS(2-ETHYLHEXYL)PHTHALATE	3500	
CHRYSENE	330	U
DI-N-OCTYL PHTHALATE	330	U
BENZO(B)FLUORANTHENE	330	U
BENZO(K)FLUORANTHENE	330	U
BENZO(A)PYRENE	330	U
INDENO(1,2,3-CD)PYRENE	330	U
DIBENZO(A,H)ANTHRACENE	330	U
BENZO(G,H,I)PERYLENE	330	U

** NOTE N/A MEANS NOT ANALYZED **
*** I MEANS ANALYZED BUT INVALID DATA ***

ANALYSIS TYPE GCMS SCAN

TITLE BARNES RESIDENCE
LAB EPA REGION VII
SAMPLE PREP _____ ANALYST/ENTRY GMC

MATRIX WATER
METHOD 6251W00
REVIEWER _____
DATA FILE GMC

UNITS UG/L
CASE
DATE 04/25/88

SAMPLE NO	TENTATIVELY IDENTIFIED COMPOUNDS	ESTIMATED CONCENTRATION
PK824001	UNKNOWN AROMATIC HYDROCARBON	30 J
PK824001	UNKNOWN AROMATIC HYDROCARBON	10 J
PK824001	UNKNOWN AROMATIC HYDROCARBON	30 J
PK824001	UNKNOWN AROMATIC HYDROCARBON	20 J
PK824001	UNKNOWN AROMATIC HYDROCARBON	10 J
PK824001	UNKNOWN AROMATIC HYDROCARBON	30 J
PK824001	UNKNOWN	20 J
PK824001	UNKNOWN	10 J
PK824001	UNKNOWN	20 J

* THIS IS A CRUDE ESTIMATION BASED ON RESPONSE RELATIVE TO AN INTERNAL STANDARD AN AUTHENTIC STANDARD HAS NOT BEEN RUN

** THE COMPOUNDS WERE IDENTIFIED USING A LIBRARY SEARCH ROUTINE AUTHENTIC STANDARDS HAVE NOT BEEN ANALYZED TO VERIFY COMPOUND MASS SPECTRA AND RETENTION TIMES